

REMARKS

This application has been reviewed in light of the Office Action dated November 21, 2003. Claims 1-9 are pending in this application. Non-elected Claims 10-20 have been cancelled, without prejudice or disclaimer of subject matter. Claim 1, 5-7, and 9 have been amended to define still more clearly what Applicants regard as their invention. Favorable reconsideration is requested.

The Office Action rejected Claim 6 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Applicants have amended Claim 6 and believe that it clearly recites that the charge/voltage conversion unit is connected to the buried photodiode through the transfer switch. Applicants respectfully request that this rejection be withdrawn.

The Office Action rejected Claims 1, 5, 7, and 8 under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art, in view of U.S. Patent No. 6,025,875 (Vu et al.); rejected Claim 2 as being unpatentable over the admitted prior art, in view of Vu et al., and further in view of U.S. Patent No. 6,121,087 (Mann et al.); rejected Claim 3 as being unpatentable over the admitted prior art, in view of Vu et al. and Mann et al., and further in view of U.S. Patent No. 6,184,516 (Sawada et al.); rejected Claim 4 as being unpatentable over the admitted prior art, in view of Vu et al. and Mann et al., and further in view of U.S. Patent Application Publication No. 2002/0022325 A1 (Gardner et al.); rejected Claim 6 as being unpatentable over the admitted prior art, in view of Vu et al. and further in view of European Patent Application No. 0254497 (Tandon et al.); rejected Claim 9 as being unpatentable over the admitted prior art, in view of Vu et al., and further in view of well-known prior art. Applicants respectfully traverse these rejections.

Applicants submit that amended independent Claim 1, together with the remaining claims dependent thereon, is patentably distinct from the proposed combination of the cited prior art at least for the following reasons.

Claim 1, as amended, is directed to an image sensing apparatus integrated on a single semiconductor substrate. The apparatus includes a sensor block, a signal processing block, a single electrical power input terminal, and a control circuit. The sensor block includes a pixel unit and a scanning unit for selecting a pixel from the pixel unit, where the pixel unit is comprised of a plurality of pixels and each pixel includes a light-receiving element. The signal processing block processes a signal output from the sensor block and the single electric power voltage input terminal allows for externally inputting an electric power voltage from outside the sensor. The image sensor contains a control circuit for generating a plurality of different voltages from the electric power voltage externally input at the single electric power voltage input terminal to make power supply voltages or amplitudes or a high level clock signal, that may be used in the sensor block, higher than a power supply voltage of the signal processing block.

Among the notable features of Claim 1 are that the sensor is integrated on a single semiconductor substrate and is arranged so as to include a single voltage input terminal at which an external electric power voltage is input to the sensor. Additionally, the image sensor includes a control circuit which generates a plurality of different voltages from the electric power voltage externally input at the single voltage input terminal in order to make power supply voltages or amplitudes or high levels of a clock signal, that may be used in the sensor block, higher than a power supply voltage of the signal processing block.

Vu et al., as understood by Applicants, relates to an analog signal sampler for imaging systems. In Vu et al, Figure 5 illustrates an analog signal sampler that is

connected to a CCD through a capacitor C_{CL} and a clamp switch. In this arrangement, Vu et al. discusses that the capacitor, functioning together with the clamp switch, attains a shift of the DC level of the image sensor signal (col. 5, lines 6-26). Applicants submit, however, that nothing has been found in Vu et al. that would teach or suggest that in order to attain the shift of the image sensor level, a plurality of different electrical power voltages are generated from an external voltage, where the input for the external voltage is arranged as a single voltage input terminal, as recited in Claim 1.

Applicants note that the Examiner stated in the Office Action (and the Applicants agree) that the admitted prior art fails to teach that the power supply voltage or an amplitude or high level of a clock signal used in the sensor block is higher than a power supply voltage of the signal processing block.

Accordingly, Applicants submit that at least for the reasons described above, Claim 1 is patentable over the cited prior art, when taken separately or in any proper combination.

The other rejected claims in this application depend from Claim 1 discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

A review of the other art of record, including Mann et al., Sawada et al, Gardner et al., and Tandon et al., has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as applied against independent Claim 1. Therefore, Claim 1 is respectfully submitted to be patentable over the art of record.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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